



# AFCTN Test Report

## 94-111

AFCTB-ID  
94-110



**Technical Publication Transfer  
Using:**



**Sikorsky Aircraft's Data  
Supporting:**



**The Army Blackhawk Program**

**(Contract #DAAJ09-92-C-0004, P00017)**



**MIL-STD-1840A**

**MIL-M-28001B (SGML)**

**MIL-D-28003 (CGM)**

**Quick Short Test Report**

**12 August 1994**



*Prepared For:*  
*Electronic Systems Center*  
*Air Force CALS Program Office*  
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*Dayton, Ohio 45431-1672*

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**Quick Short Test Report**

**12 August 1994**

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# Air Force CALS Test Bed

## *Notification of Test Results*

12 August 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

### Sikorsky Aircraft

Identified as follows:

Title:	<b>Technical Publication Transfer</b>
Program:	<b>Blackhawk</b>
Program Office:	<b>U. S. Army</b>
Contract No.:	<b>DAAJ09-92-C-0004, P00017</b>
QSTR No.:	<b>AFCTB-ID 94-110</b>

Received on the following media:     **9-Track Tape**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard:	<b>Pass</b>
MIL-STD-1840A Media Format:	<b>Pass</b>
MIL-D-28000A IGES:	<b>N/A</b>
MIL-M-28001B SGML:	<b>Pass</b>
MIL-R-28002A Raster:	<b>N/A</b>
MIL-D-28003 CGM:	<b>Pass</b>

Formal results with associated disclaimer are documented and available from the AFCTB.

Air Force CALS Test Bed  
HQ ESC/AV-2P  
4027 Colonel Glenn Highway, Suite 300  
Dayton, OH 45431-1672  
Phone: 513-257-3085              FAX: 513-257-5881

## 1. Introduction

### 1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Sikorsky Aircraft's interpretation and use of the CALS standards in transferring technical publication data. Sikorsky used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

## 2. Test Parameters

**Test Plan:** AFCTB 94-110

**Date of Evaluation:** 12 August 1994

**Evaluator:**  
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Air Force CALS Test Bed  
DET 2 HQ ESC/AV-2P  
4027 Colonel Glenn Hwy  
Suite 300  
Dayton OH 45431-1672

**Data Originator:**  
Frank Krasnicki  
Sikorsky Aircraft  
6900 Main St. M/S B205A  
P. O. Box 9729  
Stratford CT 06497-9129  
203 384-7068

**Data Description:**  
Technical Manual Test  
1 Document Declaration file  
1 Document Type Definition (DTD)  
1 Text/Standard Generalized Markup Language (SGML) file  
42 Computer Graphics Metafiles (CGM)

**Data Source System:**  
1840  
**HARDWARE**  
DEC 5000 Ultrix RISC Workstations  
**SOFTWARE**  
ArborText Adept 1840A Tape Utility and Graphics Conversion Filters

**Text/SGML**  
**HARDWARE**  
DEC 5000 Ultrix RISC Workstations  
DEC 5500 Server  
**SOFTWARE**  
ArborText Adept SGML Editor v5.1  
Parlance Document Manager v1.3  
Interbase Relance Publisher

CGM

**HARDWARE**

Auto-trol Apollo EN3550 Graphics Workstation  
Auto-trol Apollo DSP 4500 Servers

**SOFTWARE**

Auto-trol Tech Illustrator Plus v8.2.6  
Auto-trol S5K/IGES Processor v6.0  
Auto-trol S5K/CGM Converter v1.4  
Auto-trol S5K/DXF AutoCad Converter v3.0

**Evaluation Tools Used:**

**MIL-STD-1840A (TAPE)**

SUN 3/280

AFCTN Tapetool v1.2.10 UNIX  
XSoft CAPS/CALS v40.4

**MIL-M-28001 (SGML)**

PC 486/50

Exoterica XGMLNormalizer v1.2e3.2  
Exoterica Validator v2.0 exl  
McAfee & McAdam Sema Mark-it v2.3  
Public Domain sgmls

**MIL-D-28003 (CGM)**

HP 735

InterCAP X-Change v7.82  
Carberry CADLeaf 4.0  
Island Software IslandDraw v4.1  
Island Software IslandDraw v3.0  
SGI Indigo 2  
IGES Data Analysis (IDA) CALSView  
SUN SparcStation 2  
Auto-trol S5000 CGM Converter R 2.0  
Island Software IslandDraw v3.0  
Island Software IslandDraw v4.0

PC 486/50

Advanced Technology Center  
(ATC) *MetaCheck R 2.10*  
ATC *ForView*  
IDA *CALSView Windows*  
Software Publishing Corporation  
(SPC) *Harvard Graphics v3.05*  
Inset Systems *HiJaak Pro*  
Lotus *Freelance v2.01*  
Micrografx *Designer v4.0*  
Corel *Ventura Publisher*

**Standards**

**Tested:**

MIL-STD-1840A  
MIL-M-28001B  
MIL-D-28003

### **3. 1840A Analysis**

#### **3.1 External Packaging**

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

#### **3.2 Transmission Envelope**

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

##### **3.2.1 Tape Formats**

The tape was run through the AFCTN Tapetool v1.2.10 utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using XSoft's CAPS read1840A utility without any reported errors.

The physical structure of the tape meets the requirements defined in ANSI x3.27 and CALS MIL-STD-1840A.

##### **3.2.2 Declaration and Header Fields**

No errors were found in the Document Declaration file and data file headers. This portion of the tape meets the requirements defined in MIL-STD-1840A.

## 4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

## 5. SGML Analysis

The AFCTB has several parsers available for evaluating submitted DTD and text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report. Changes to DTD or text files required by each system are not documented in the report.

The text and DTD files were evaluated using the Exoterica Validator ex1 parser. One warning was issued for a mixed content model.

The text and DTD files were tested using the Exoterica XGMLNormalizer parser. No errors or warnings were issued.

The text and DTD files were evaluated using McAfee & McAdam's Sema Mark-it v2.3 parser. No errors or warnings were issued.

The text and DTD files were evaluated using the Public Domain sgmls parser. No errors or warnings were issued.

The text and DTD files meet the CALS MIL-M-28001B specification.

## 6. Raster Analysis

No Raster files were included in this evaluation.

## 7. CGM Analysis

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The tape contained 42 CGM files. All files were viewed using at least three different software products. Because of the number of CGM files include on the tape, only a sample of the files were inspected in detail.

All files were evaluated using ATC's *MetaCheck* with CALS options, and AFCTN's *validcgm*. No errors were reported by these utilities. Due to noted visual errors during the initial review, files D001C018 and D001C029 were selected for the analysis below.

The CGM files were converted using a utility available within the AFCTB without a reported error. The resulting files were read into Island Software's *IslandDraw v3.1*, displayed and printed. File C018 was noted as having text that exceeded the expected area. File C029 had an overlap in the text in the legend. Many of the other files were noted with text that touched if two lines were together.

Sample files were imported into ATC's *ForView* software without a reported error. When viewed on the screen all text appeared several times larger than normal. The displayed images would have been unusable.

All files were read into Carberry's *CADLeaf* software and displayed. Text overflow was noted in many of the files. File C029, along with several other files, were noted with overlapping text.

According to R. Bryan DiAntonio of Carberry Technology, "With the 'Proportional Font' option turned on all files looked correct. No text overlap was found."

All files were read into IDA's CALSView. The text overflow, overlap, and touching problems were noted in most files. When the files were displayed in IDA's CALSView for Windows, the images appeared to be complete. However, when they were printed the light blue entities were missing.

The files were imported into the Micrografx Designer with reported errors. When displayed and printed, some entities were noted as missing. The text font problems noted in most software applications were not present.

According to Michael Harrison of Micrografx, Inc., "The version of Micrografx Designer used with this report has been replaced with Designer version 4.1a TE which reads and prints these files successfully."

The files were imported into Lotus' Freelance and displayed. The text font problems, as noted above, were also noted in this application.

The selected files could not be imported into SPC's Harvard Graphics v3.05 due to size. Other files were imported without any reported errors. The text font problems were also noted.

The files were read into Inset Systems' HiJaak Pro without a reported error. The text font problems were present in this application.

The files were imported directly into Island Software's IslandDraw v4.0 without a reported error. When displayed, many entities were noted as missing. Changing colors brought some of the text into view, but created other problems. Some entities were noted as misshaped. The text would not display unless the colors were changed.

All files were read into InterCAP's X-Change without a reported error. The text font problems were present in this application.

The files were imported into Corel's Ventura Publisher without a reported error. The text font problem was not noted in this application. However, some entities were missing, misshaped, or misplaced on the image.

The CGM files meet the CALS MIL-D-28003 specification. It was noted that every application used during the evaluation had some sort of problem. The font size and location appeared to be the most consistent. Applications that could handle the fonts had problems with the graphic entities.

## 8. Conclusions and Recommendations

The physical structure and CALS headers of the tape were correct. This portion of the tape meets the requirements defined in MIL-STD-1840A.

The SGML files meet the CALS MIL-M-28001B specification.

The CGM files meet the CALS MIL-D-28003 specification. It was noted that all applications used within the AFCTB had problems with some of the files.

The tape submitted by Sikorsky Aircraft meets the CALS MIL-STD-1840A requirements.

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information  
ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange  
ANSI X3.4 (1986). - Coded Character Sets - 7 Bit ASCII

Fri Aug 12 11:28:28 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set048

Page: 1

File Name	File Type	Record Format/ Length	Block Length/ Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001C004	CGM	F/00080	00800/000045	Extracted
D001C005	CGM	F/00080	00800/000011	Extracted
D001C006	CGM	F/00080	00800/000005	Extracted

<<<< PART OF LOG FILE REMOVED HERE >>>>

D001C044	CGM	F/00080	00800/000015	Extracted
D001C045	CGM	F/00080	00800/000025	Extracted
D001G002	DTD	D/00260	02048/000016	Extracted
D001H003	Output Specification	D/00260	02048/000002	Extracted
D001T001	Text	D/00260	02048/000312	Extracted

Catalog Process terminated normally.

## 9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Aug 12 11:27:16 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...  
/dev/rmt0 allocated.

VOL1CALS01

KRASNICK

4

Label Identifier: VOL1  
Volume Identifier: CALS01  
Volume Accessibility:  
Owner Identifier: KRASNICK  
Label Standard Version: 4

HDR1D001 00010001000100 94222 99364 000000UNIX4.2-PRODS

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier:  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 94222  
Expiration Date: 99364  
File Accessibility:  
Block Count: 000000  
Implementation Identifier: UNIX4.2-PRODS

<<<< PART OF LOG FILE REMOVED HERE >>>>

##### End of Volume CALS01 #####

##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

### 9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Fri Aug 12 11:28:29 1994

MIL-STD-1840A File Set Evaluation Log

File Set: Set048

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Sikorsky Aircraft

srcdocid: DMWR 1-1650-384

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19940811

dstsys: Air Force CALS Test Bed

dstdocid: DMWR 1-1650-384

dstrelid: NONE

dtetrn: 19940811

dlvacc: NONE

filcnt: T1,G1,H1,C42

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Technical Order

docttl: Tail Rotor Servo Assy

Found file: D001C004

Extracting CGM Header Records...

Evaluating CGM Header Records...

srcdocid: DMWR 1-1650-384

dstdocid: DMWR 1-1650-384

txtfilid: W

figid: 4-6

srcgph: aa3149

doccls: UNCLASSIFIED

notes: NONE

<<<< PART OF LOG FILE REMOVED HERE >>>>

Found file: D001G002  
Extracting DTD Header Records...  
Evaluating DTD Header Records...

srcdocid: DMWR 1-1650-384  
dstdocid: DMWR 1-1650-384  
notes: DTD

Found file: D001H003  
Extracting Output Specification Header Records...  
Evaluating Output Specification Header Records...

srcdocid: DMWR 1-1650-384  
dstdocid: DMWR 1-1650-384  
notes: FOSI

Found file: D001T001  
Extracting Text Header Records...  
Evaluating Text Header Records...

srcdocid: DMWR 1-1650-384  
dstdocid: DMWR 1-1650-384  
txtfilid: W  
doccls: UNCLASSIFIED  
notes: SGML

Saving Text Header File: D001T001\_HDR  
Saving Text Data File: D001T001\_TXT

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

## 9.4 Other Tape Reading Logs

```
/cals/caps/Bin/read1840A: --- Read declaration file 'D001      ' ---  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3149.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3126.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3127.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3128.C.cgm'.
```

<<<< PART OF LOG FILE REMOVED HERE >>>>

```
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3147.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
aa3148.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
DMWR11650384.G.dtd'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
DMWR11650384.H.out'.  
/cals/caps/Bin/read1840A: writing data file 'qstr94110/DMWR1-1650-384/  
W.T.sgm'.  
-- declaration file indicates 1 files of type T  
-- declaration file indicates 1 files of type G  
-- declaration file indicates 1 files of type H  
-- declaration file indicates 0 files of type Q  
-- declaration file indicates 0 files of type R  
-- declaration file indicates 42 files of type C  
-- declaration file indicates 0 files of type X  
-- declaration file indicates 0 files of type P  
-- declaration file indicates 0 files of type Z
```

## 10. Appendix B - Detailed SGML Analysis

### 10.1 Exoterica Validator Parser Log

```
<!-- **Warning** in "\xgml\x94110.dtd", line 634:  
An element with mixed content should permit data characters ("#PCDATA")  
everywhere.  
The element being declared is "PARA".  
<!ELEMENT para - o (label? , (%paracon;)) +(tgroup) >  
/\  
-->  
<!-- Capacity points/limits:  
TOTALCAP =68773/200000  
ENTCAP =7008/200000  
ENTCHCAP =4631/70000  
ELEMCAP =5408/70000  
GRPCAP =33088/70000  
EXGRPCAP =576/70000  
EXNMCAP =1344/70000  
ATTCAP =12096/200000  
ATTCHCAP =187/70000  
AVGRPCAP =4352/70000  
NOTCAP =32/70000  
NOTCHCAP =51/70000  
IDCAP =0/70000  
IDREFCAP =0/70000  
MAPCAP =0/70000  
LKSETCAP =0/70000  
LKNMCAP =0/70000  
-->  
<!-- 1 warning reported. -->
```

## 11. Appendix C - Detailed CGM Analysis

### 11.1 File D001C018

#### 11.1.1 Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 08/12/94      Time: 12:24:01
```

```
Metafile Examined : i:\94110\D001c018.
```

```
Pictures Examined : All
Elements Examined : All
Bytes Examined : All
```

```
===== Trace Report =====
```

```
Tracing not selected.
```

```
===== CGM Conformance Violation Report =====
```

```
No Errors Detected
```

```
===== CALS CGM Profile (MIL-D-28003) Report =====
```

```
No profile discrepancies detected.
```

```
===== Conformance Summary Report =====
```

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 08/12/94      Time: 12:24:10
```

```
Name of CGM under test: i:\94110\D001c018.
Encoding : Binary
```

```
Pictures Examined : All
Elements Examined : All
Bytes Examined : All
```

```
BEGIN METAFILE string : >aa3079<
METAFILE DESCRIPTION : >AUTO-TROL/REL-1.0 MIL-D-28003/BASIC-<
>1<
```

Picture 1 starts at octet offset 154: >aa3079<

Conformance Summary : This file conforms to the CGM specification.  
This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested  
1720 Elements Tested  
52802 Octets Tested

=====| No Errors Were Detected |=====

===== End of Conformance Report =====

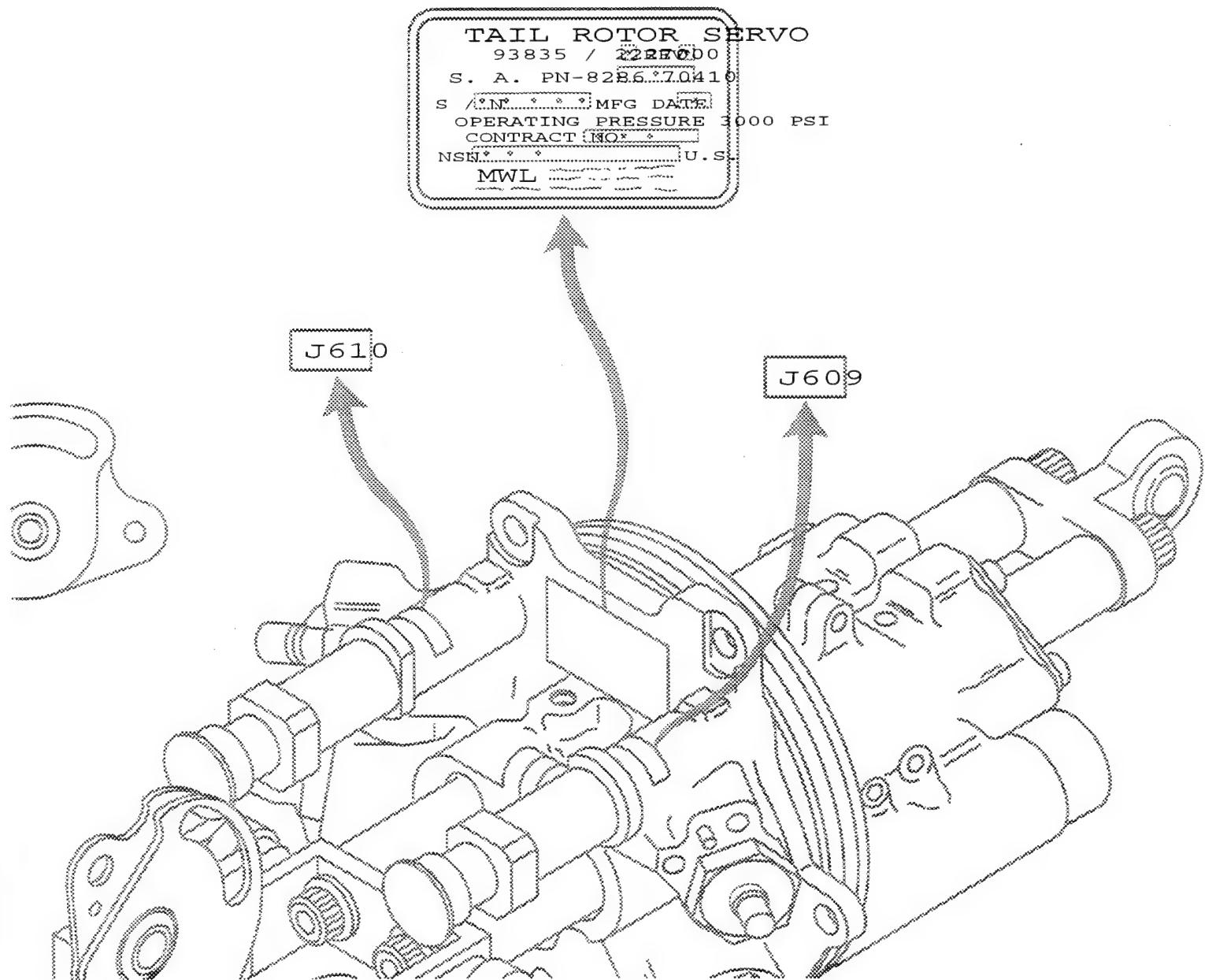
### 11.1.2 validcgm Log

Analysis for file c018.cgm using table table  
(0, 1) occurred 1 time  
(0, 2) occurred 1 time  
(0, 3) occurred 1 time  
(0, 4) occurred 1 time  
(0, 5) occurred 1 time  
(1, 1) occurred 1 time  
(1, 2) occurred 1 time  
(1, 5) occurred 1 time  
(1, 7) occurred 1 time  
(1, 8) occurred 1 time  
(1, 9) occurred 1 time  
(1, 11) occurred 1 time  
(1, 13) occurred 1 time  
(2, 1) occurred 1 time  
(2, 3) occurred 1 time  
(2, 4) occurred 1 time  
(2, 5) occurred 1 time  
(2, 6) occurred 1 time  
(2, 7) occurred 1 time  
(4, 1) occurred 1328 times

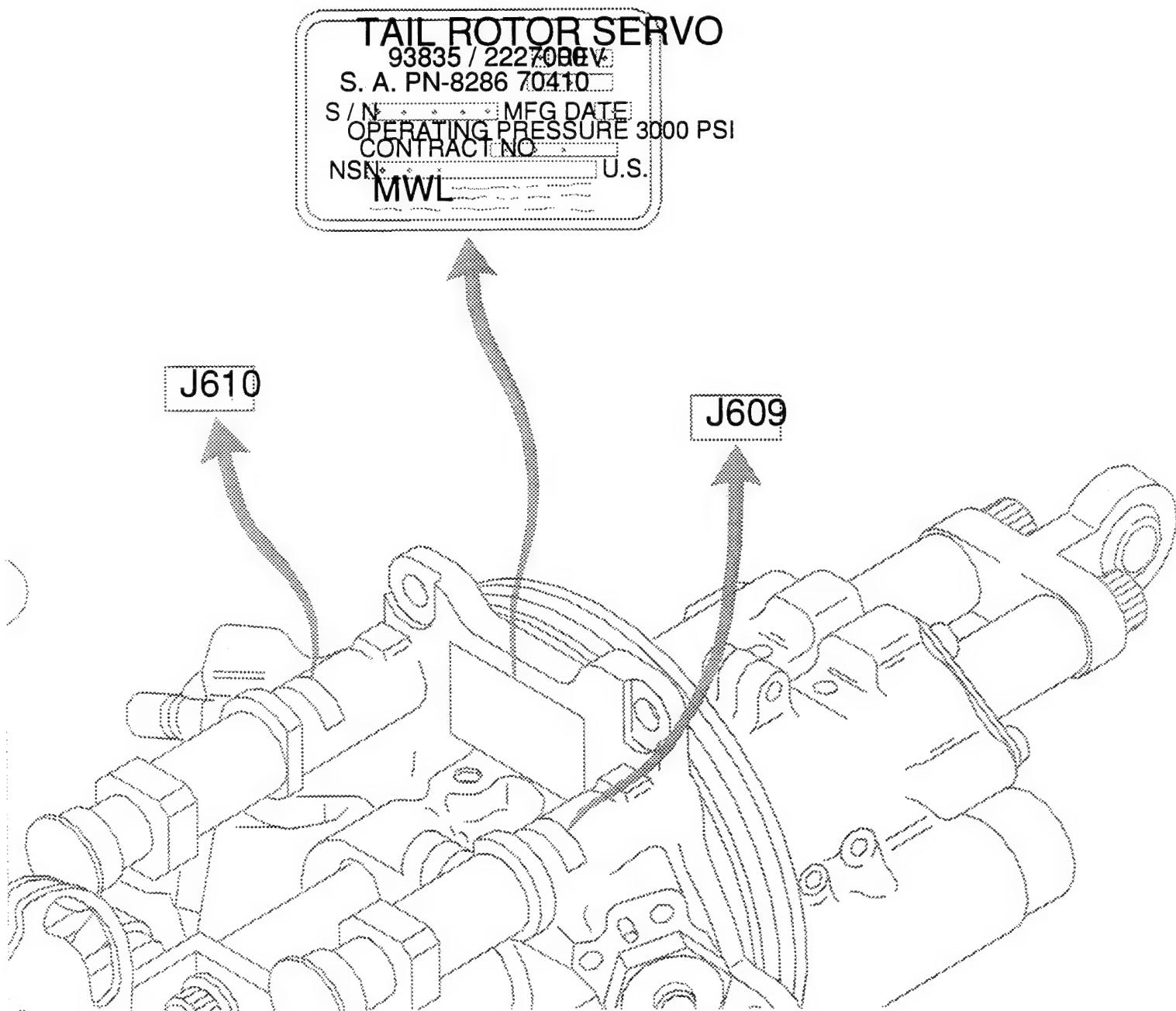
<<<< PART OF LOG FILE REMOVED HERE >>>>

(5, 34) occurred 35 times

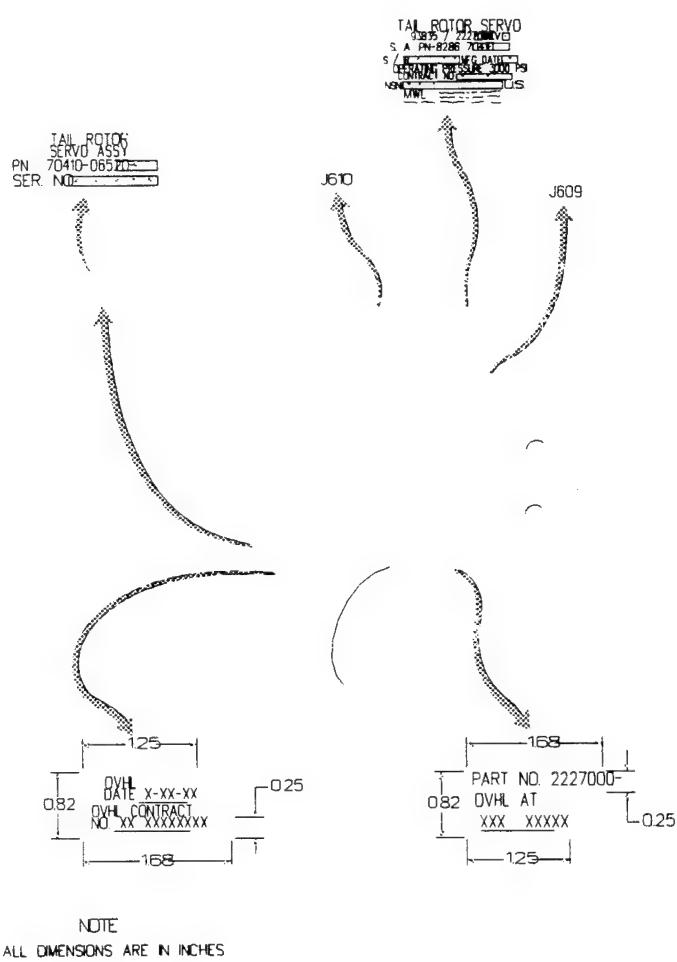
### 11.1.3 Output CADLeaf



### 11.1.4 Output CALSView

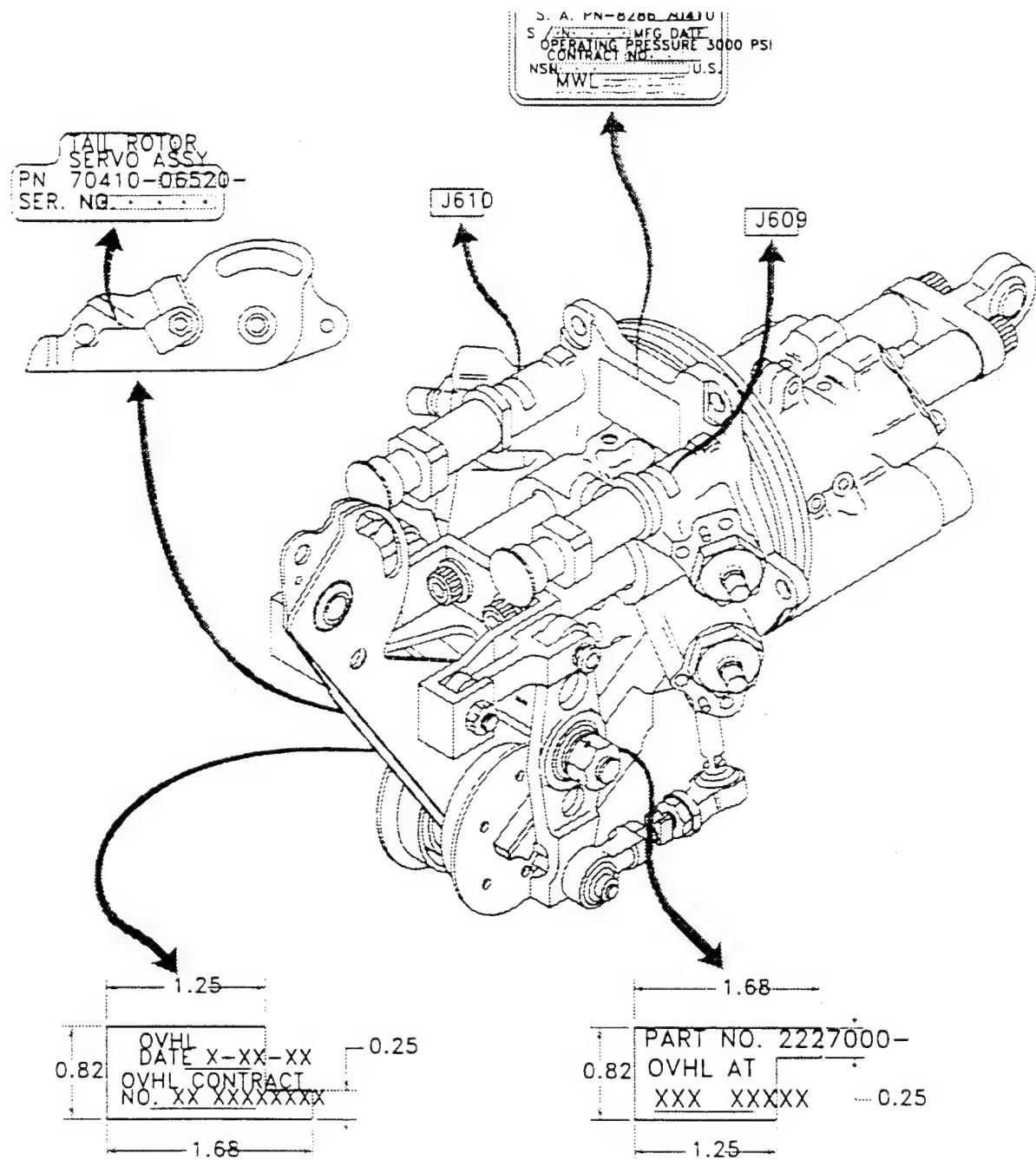


### 11.1.5 Output CALSView Windows



AA307

### 11.1.6 Output IslandDraw

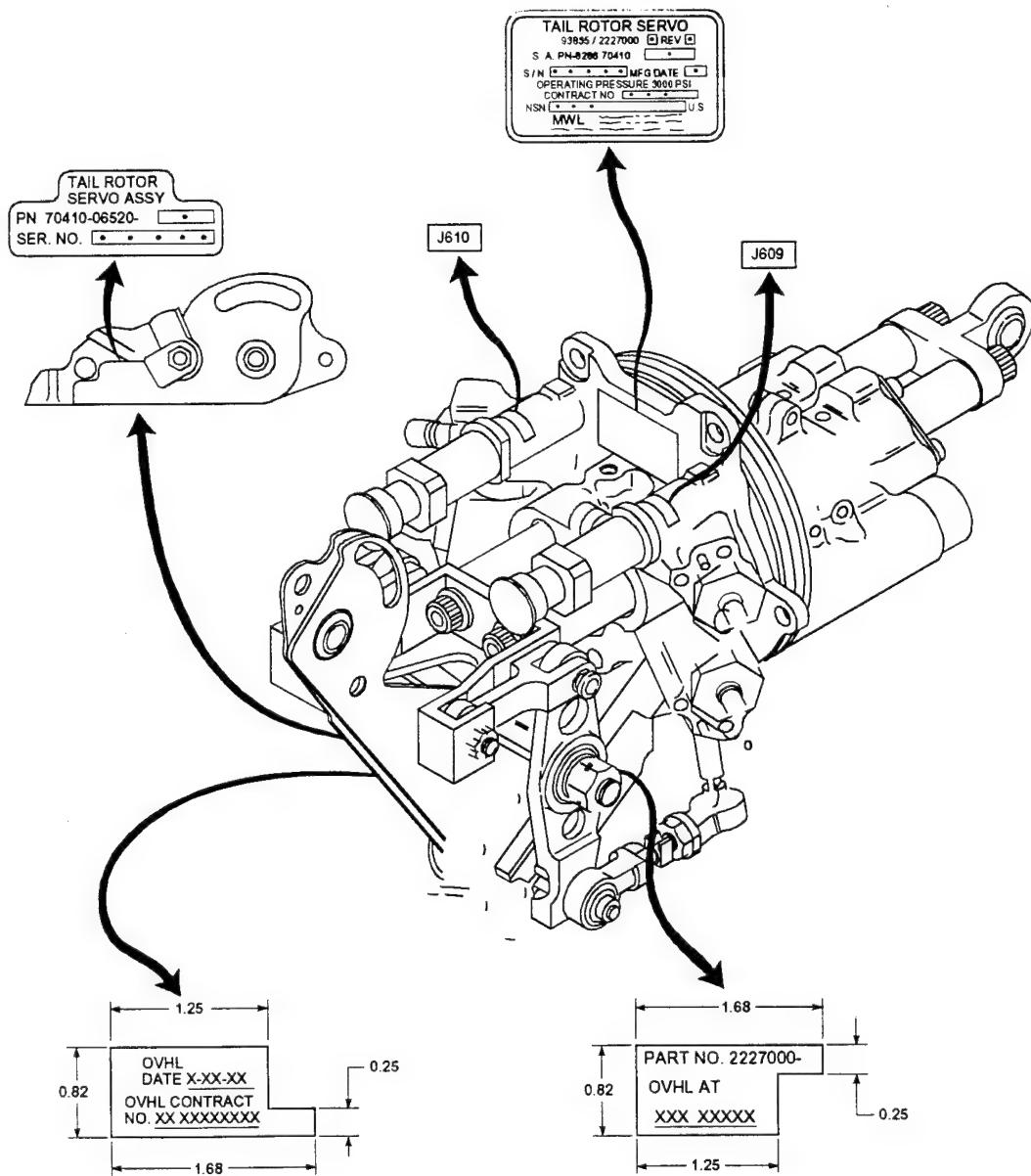


NOTE

ALL DIMENSIONS ARE IN INCHES.

AA3

### 11.1.7 Output Designer

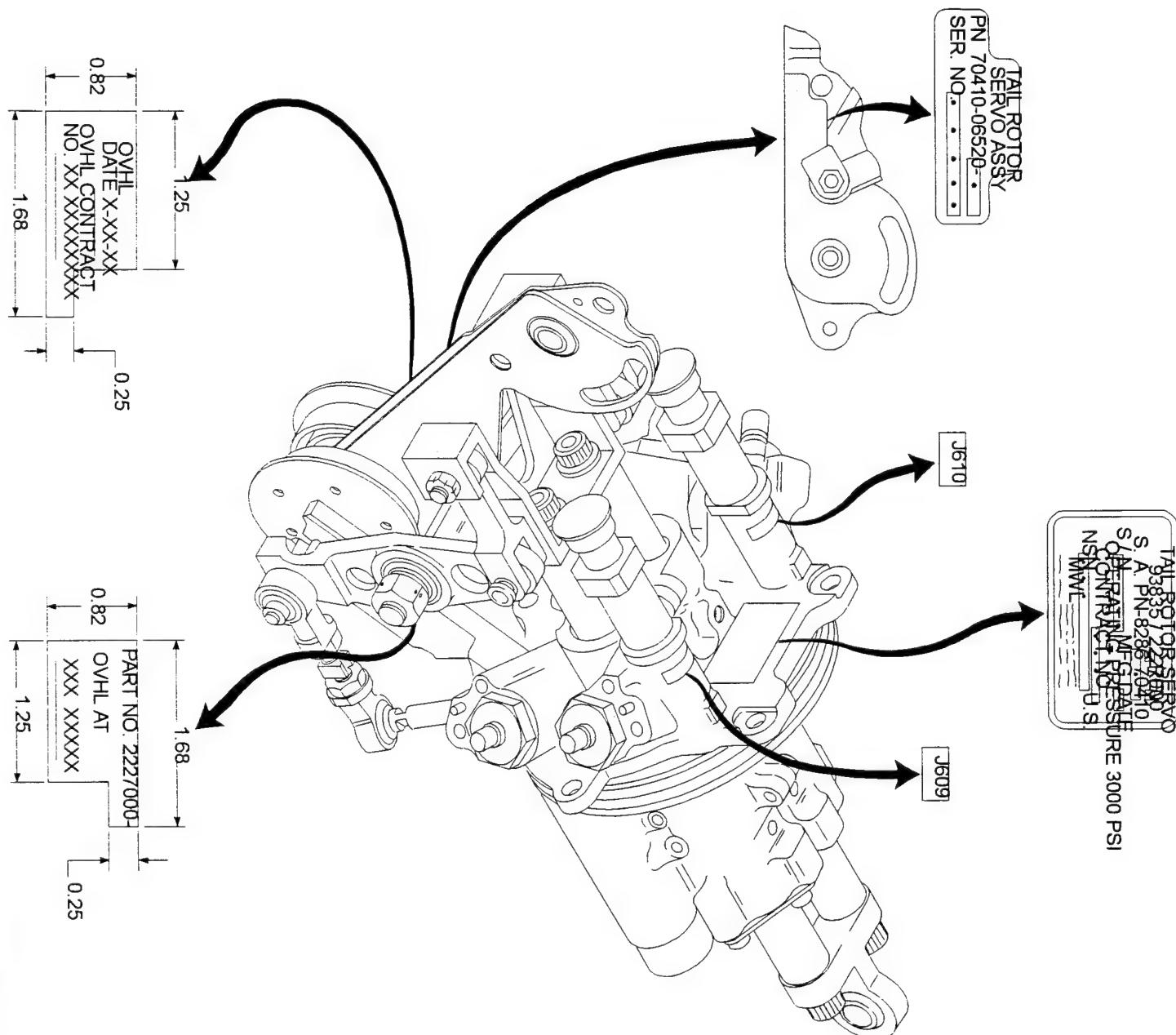


NOTE

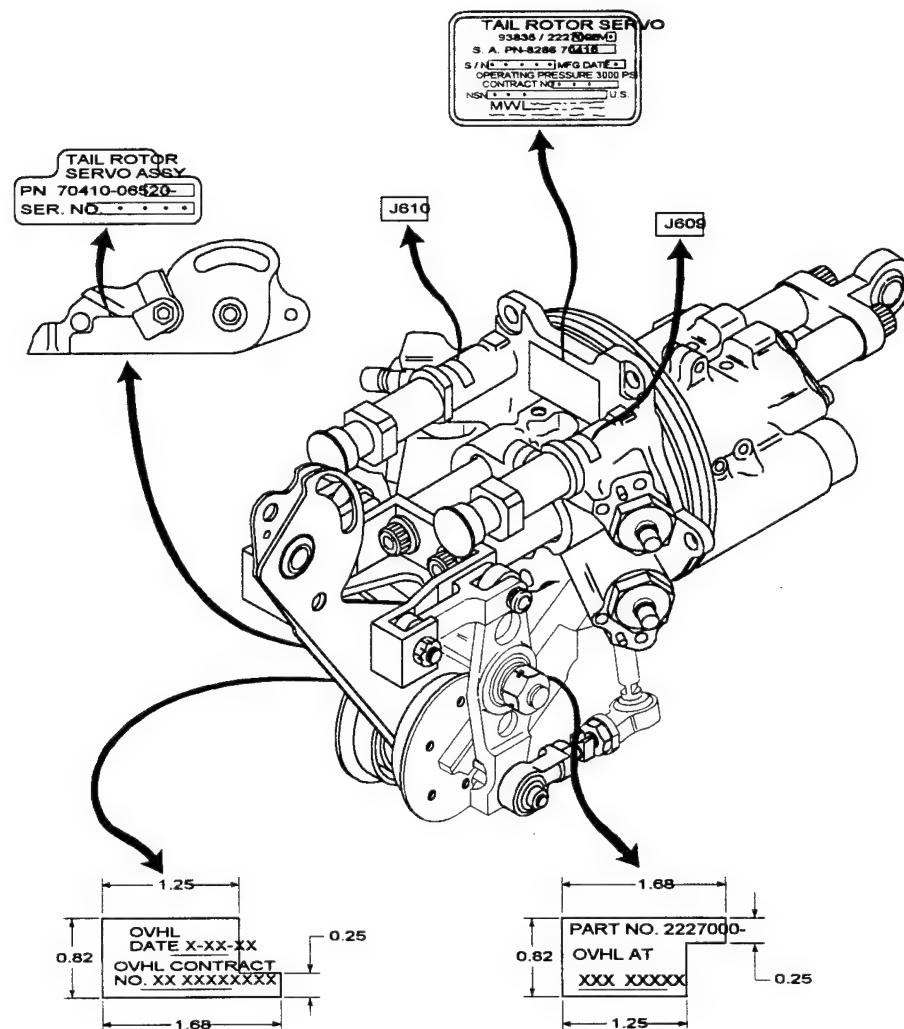
ALL DIMENSIONS ARE IN INCHES.

AA3079  
SA

### 11.1.8 Output Freelance



### 11.1.9 Output HiJaak Pro

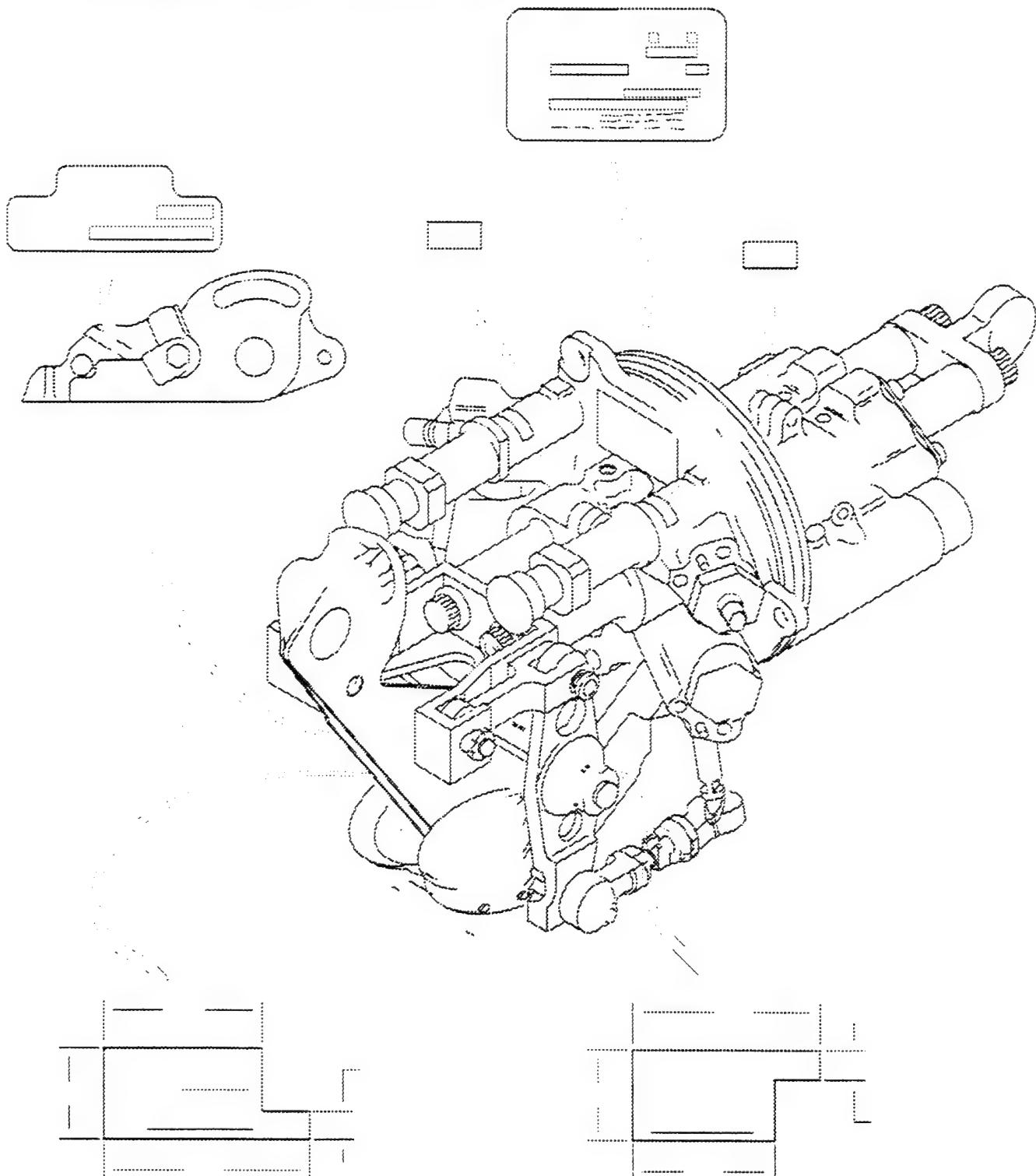


NOTE

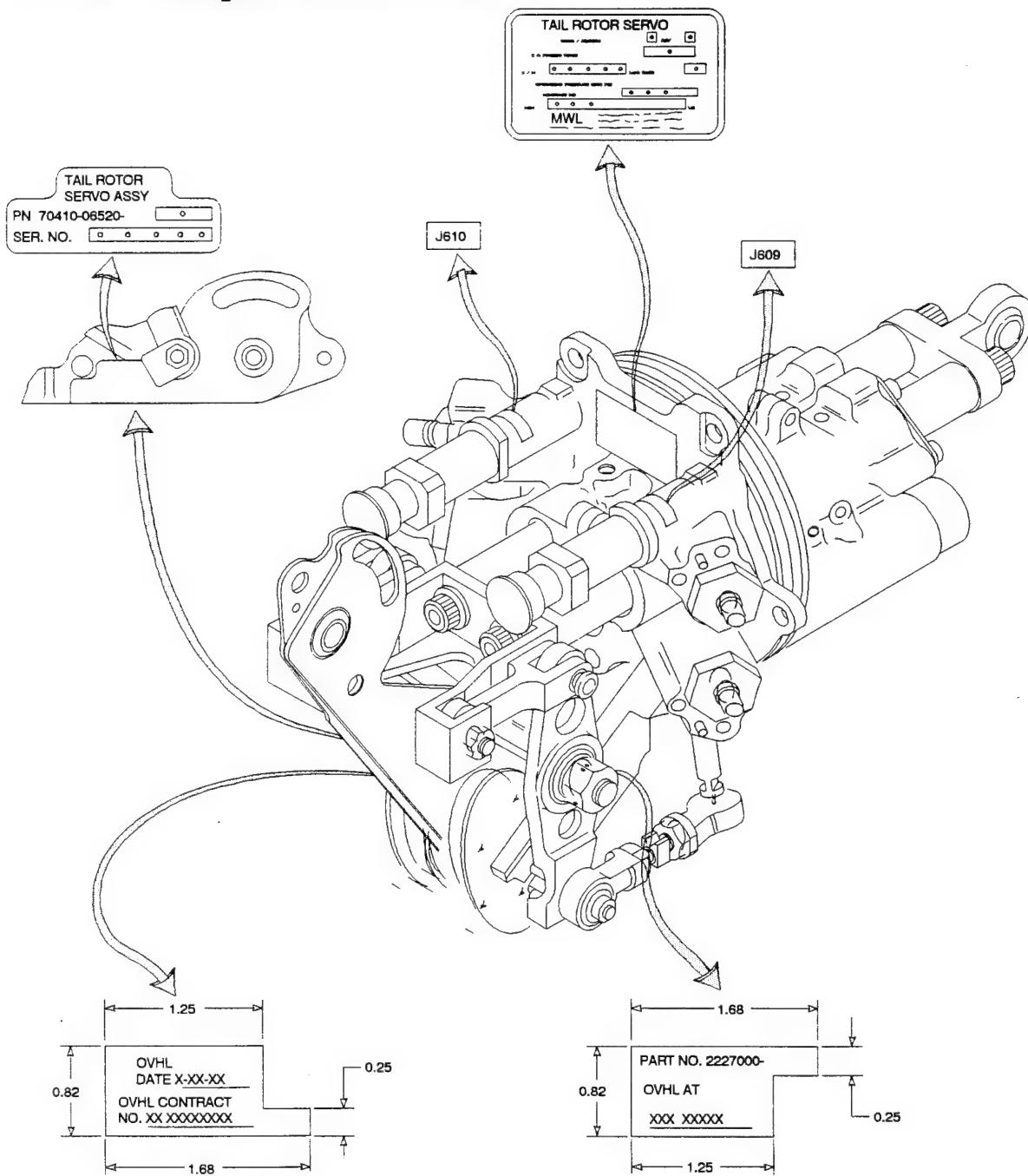
ALL DIMENSIONS ARE IN INCHES.

AA3079

### 11.1.10 Output IslandDraw v4.0



### 11.1.11 Output Ventura Publisher

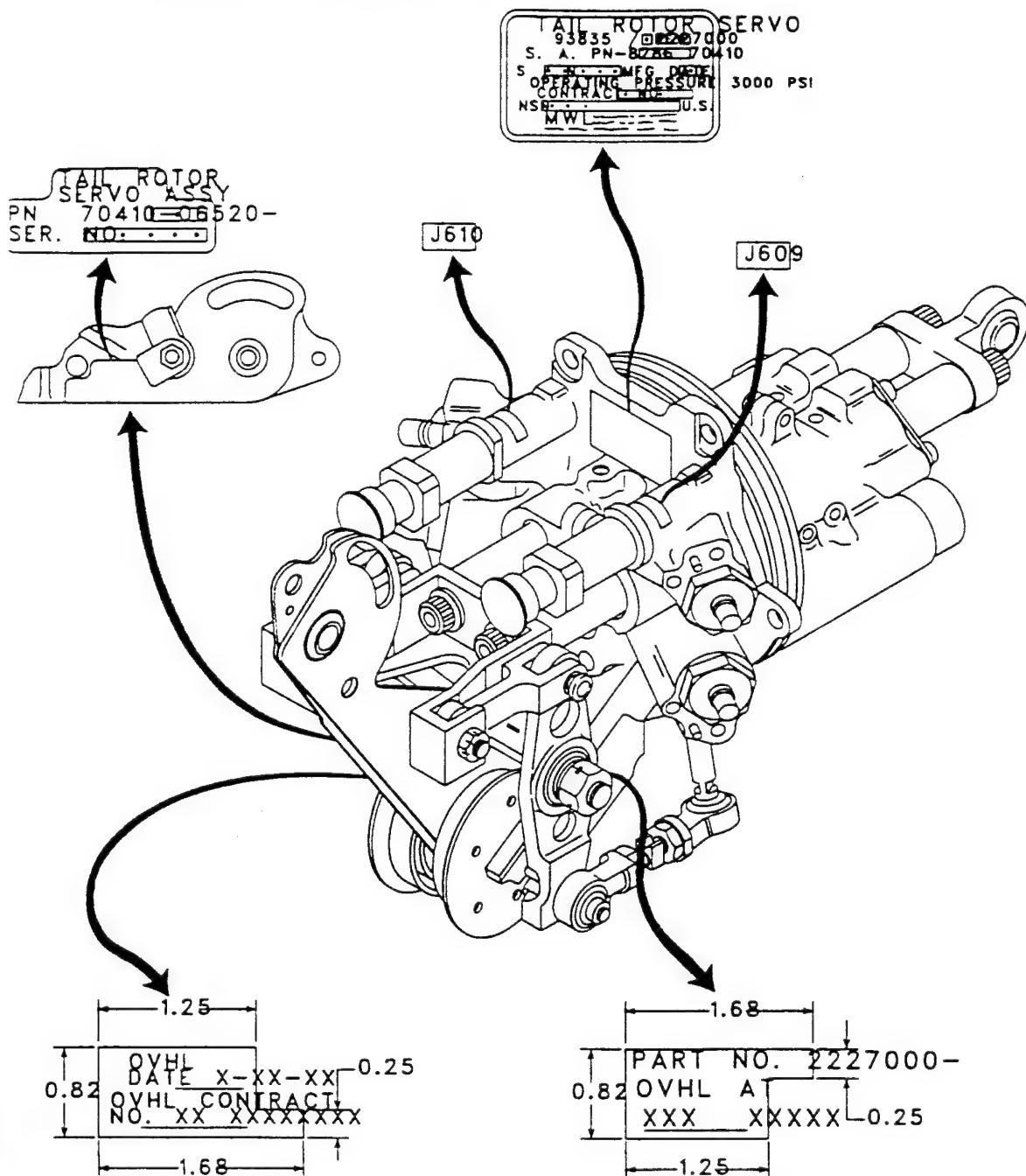


NOTE

ALL DIMENSIONS ARE IN INCHES.

AA3079

### 11.1.12 Output X-Change



**NOTE**

ALL DIMENSIONS ARE IN INCHES.

AA307  
SA

## 11.2 File D001C029

### 11.2.1 Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 08/12/94      Time: 12:24:50
```

```
Metafile Examined : i:\94110\D001c029.
```

```
Pictures Examined : All
Elements Examined : All
Bytes Examined : All
```

```
===== Trace Report =====
```

```
Tracing not selected.
```

```
===== CGM Conformance Violation Report =====
```

```
No Errors Detected
```

```
===== CALS CGM Profile (MIL-D-28003) Report =====
```

```
No profile discrepancies detected.
```

```
===== Conformance Summary Report =====
```

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 08/12/94      Time: 12:24:54
```

```
Name of CGM under test: i:\94110\D001c029.
Encoding : Binary
```

```
Pictures Examined : All
Elements Examined : All
Bytes Examined : All
```

```
BEGIN METAFILE string : >aa3139<
METAFILE DESCRIPTION : >AUTO-TROL/REL-1.0 MIL-D-28003/BASIC-<
>1<
```

```
Picture 1 starts at octet offset 154: >aa3139<
```

```
Conformance Summary : This file conforms to the CGM specification.
```

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested  
1446 Elements Tested  
16512 Octets Tested

=====| No Errors Were Detected |=====

===== End of Conformance Report =====

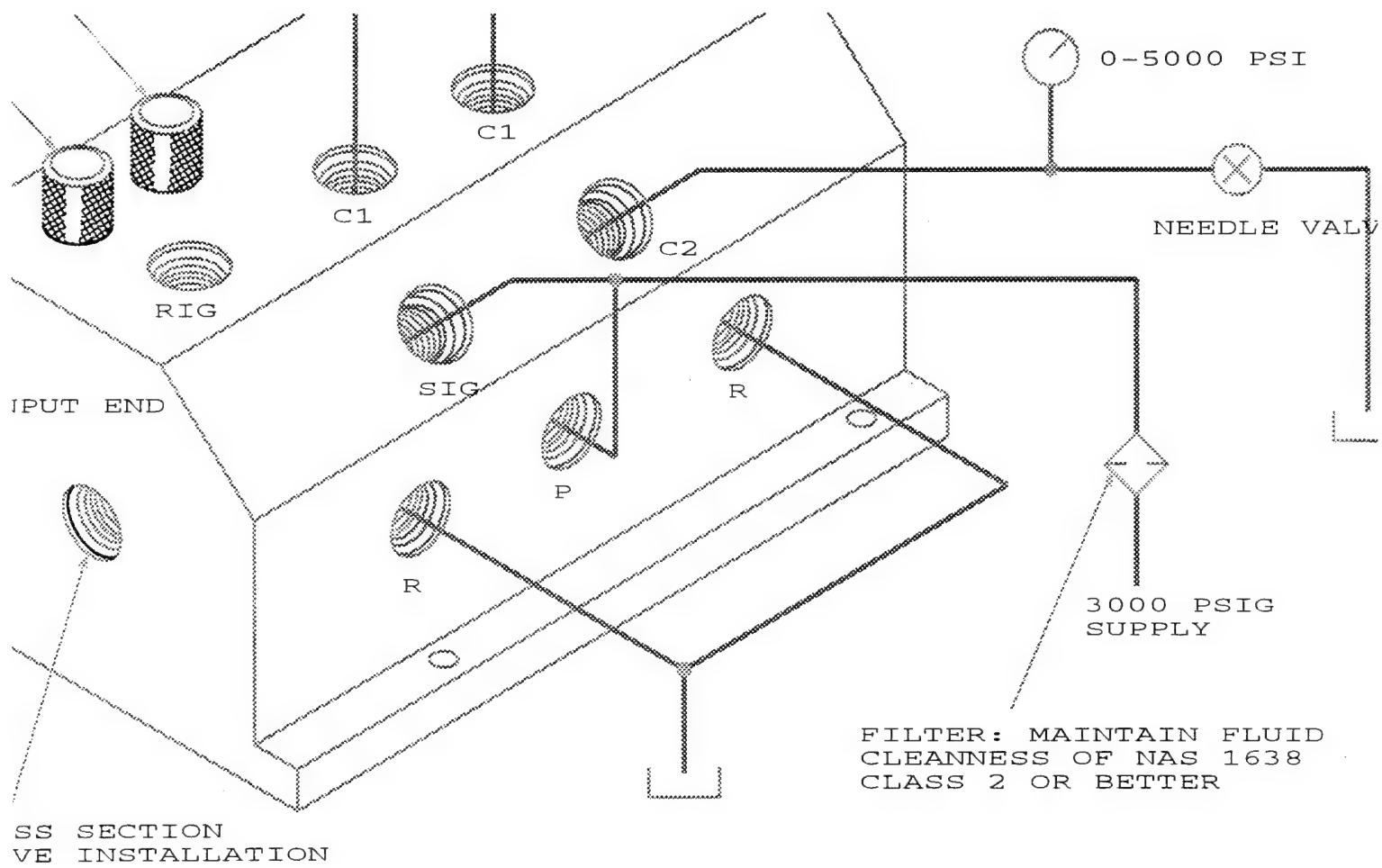
## 11.2.2 validcgm Log

Analysis for file c029.cgm using table table  
(0, 1) occurred 1 time  
(0, 2) occurred 1 time  
(0, 3) occurred 1 time  
(0, 4) occurred 1 time  
(0, 5) occurred 1 time  
(1, 1) occurred 1 time  
(1, 2) occurred 1 time  
(1, 5) occurred 1 time  
(1, 7) occurred 1 time  
(1, 8) occurred 1 time  
(1, 9) occurred 1 time  
(1, 11) occurred 1 time  
(1, 13) occurred 1 time  
(2, 1) occurred 1 time  
(2, 3) occurred 1 time  
(2, 4) occurred 1 time  
(2, 5) occurred 1 time  
(2, 6) occurred 1 time  
(2, 7) occurred 1 time  
(4, 1) occurred 1016 times  
(4, 4) occurred 54 times

<<<< PART OF LOG FILE REMOVED HERE >>>>

(5, 30) occurred 87 times  
(5, 34) occurred 35 times

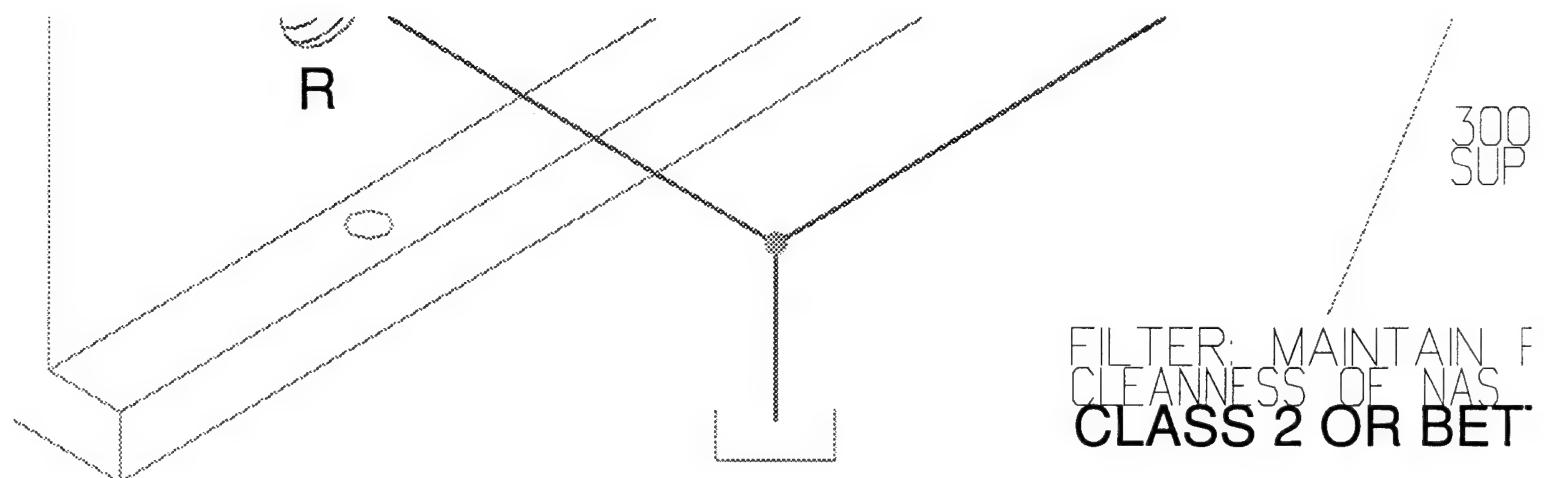
### 11.2.3 Output CADLeaf



#### LEGEND

- 2 2227000F1 TEST BLOCK
- 6 2227000F1@4G4 PIN
- 14 2227000F1@DUMMY PLUNGER
- 16 MS28775-0@PACKING
- 17 2227000F1@SPACER

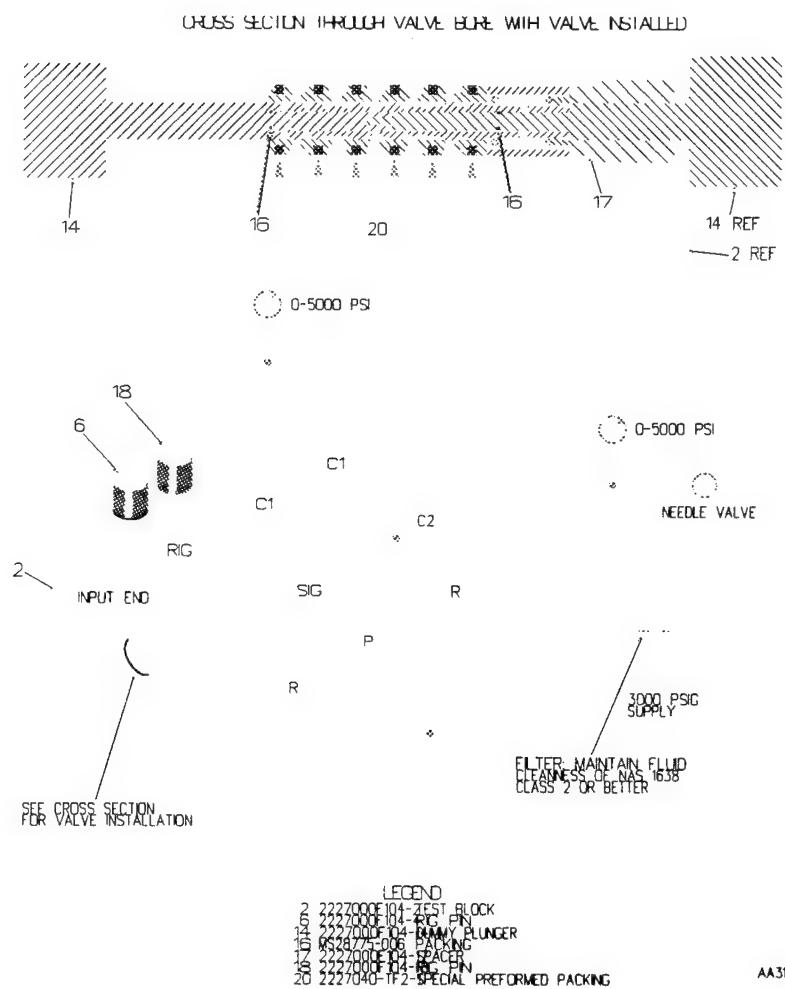
#### 11.2.4 Output CALSView



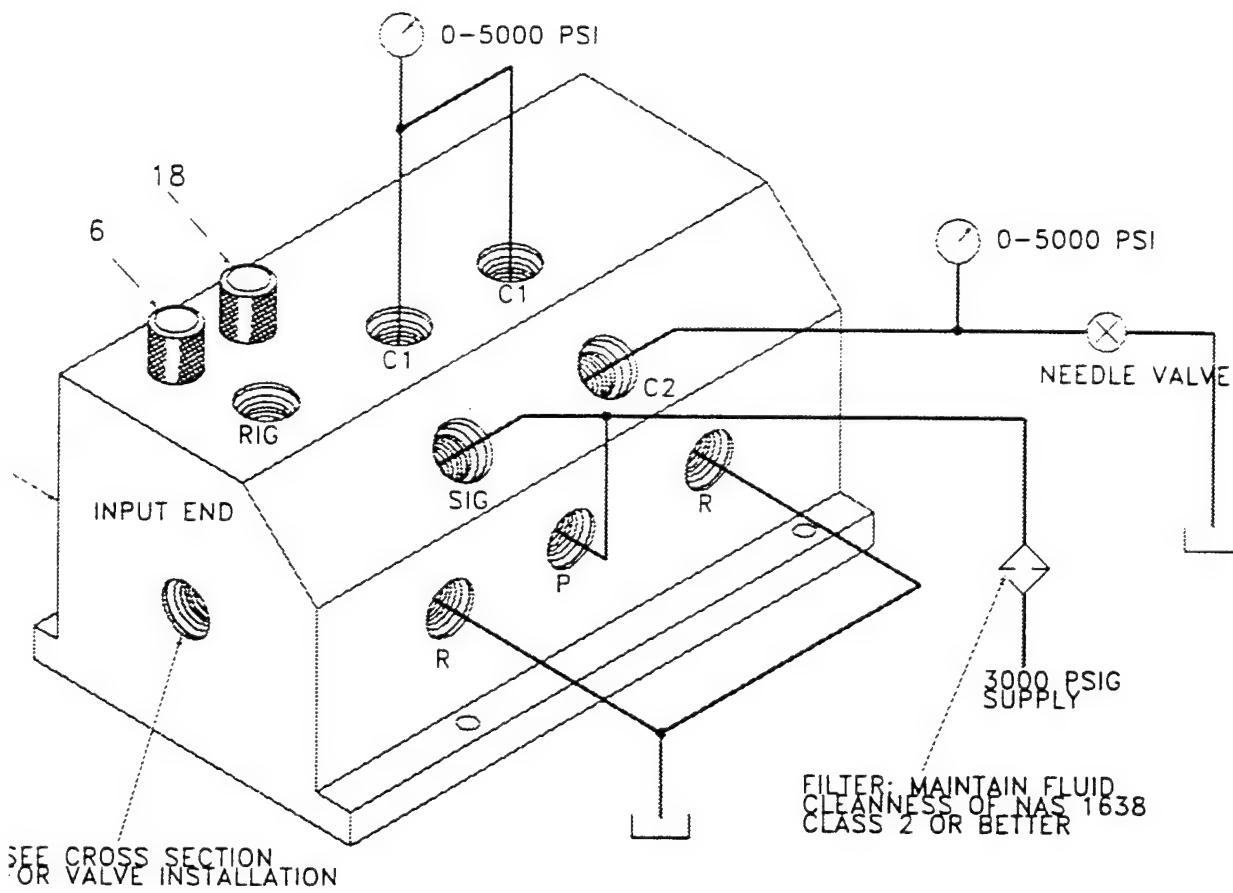
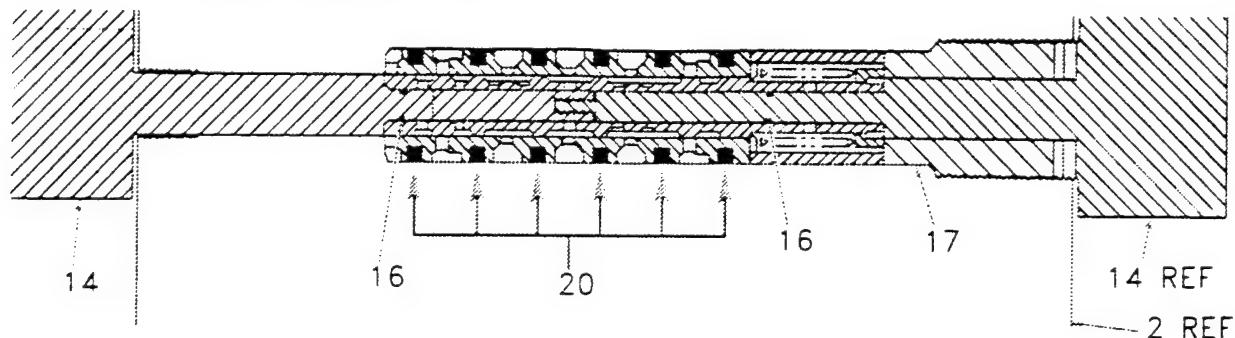
#### LEGEND

2	2227000E104	TEST BLOCK
6	2227000E104	R4G PIN
14	2227000E104	DUMMY PLUNGER
16	MS28775-006	PACKING
17	2227000E104	SPACER
18	2227000E104	R18 PIN
20	2227040-TF2	SPECIAL PREFORMED PACKII

## 11.2.5 Output CALSView Windows



### 11.2.6 Output IslandDraw

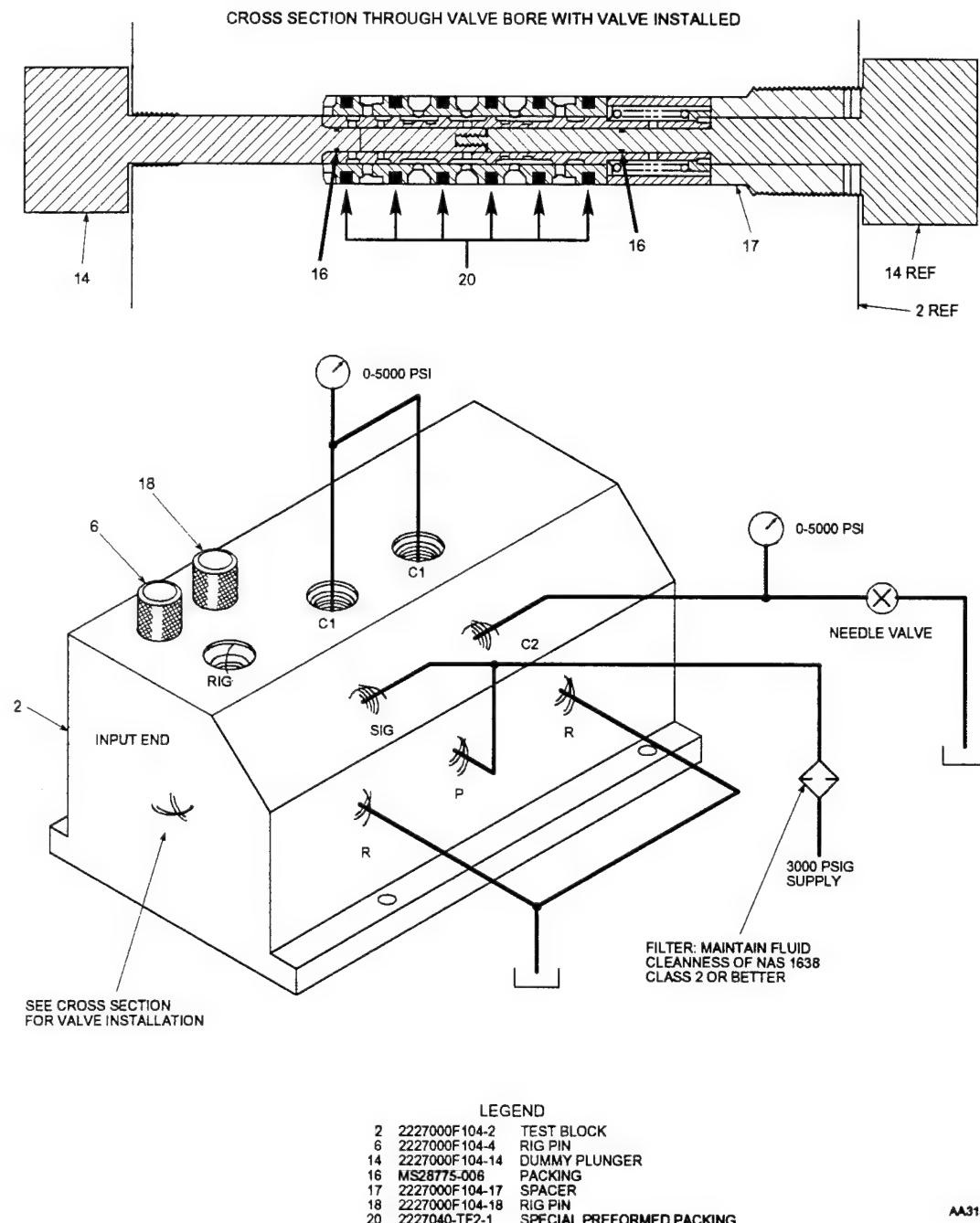


2d/id  
D29

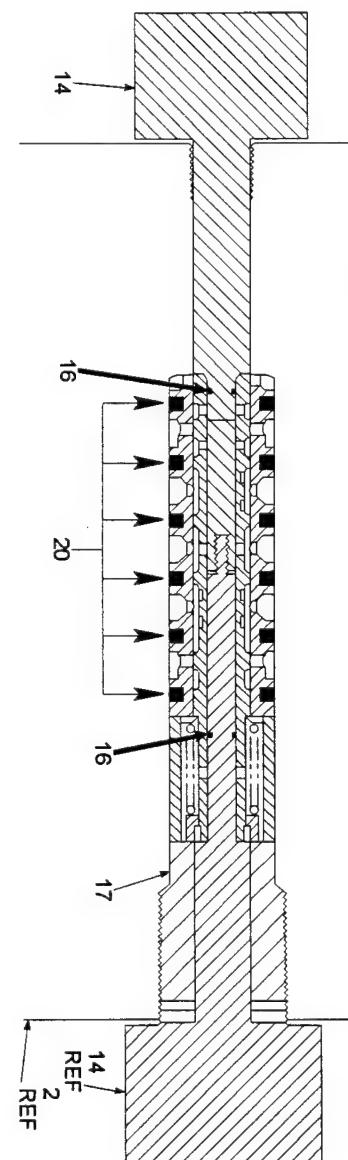
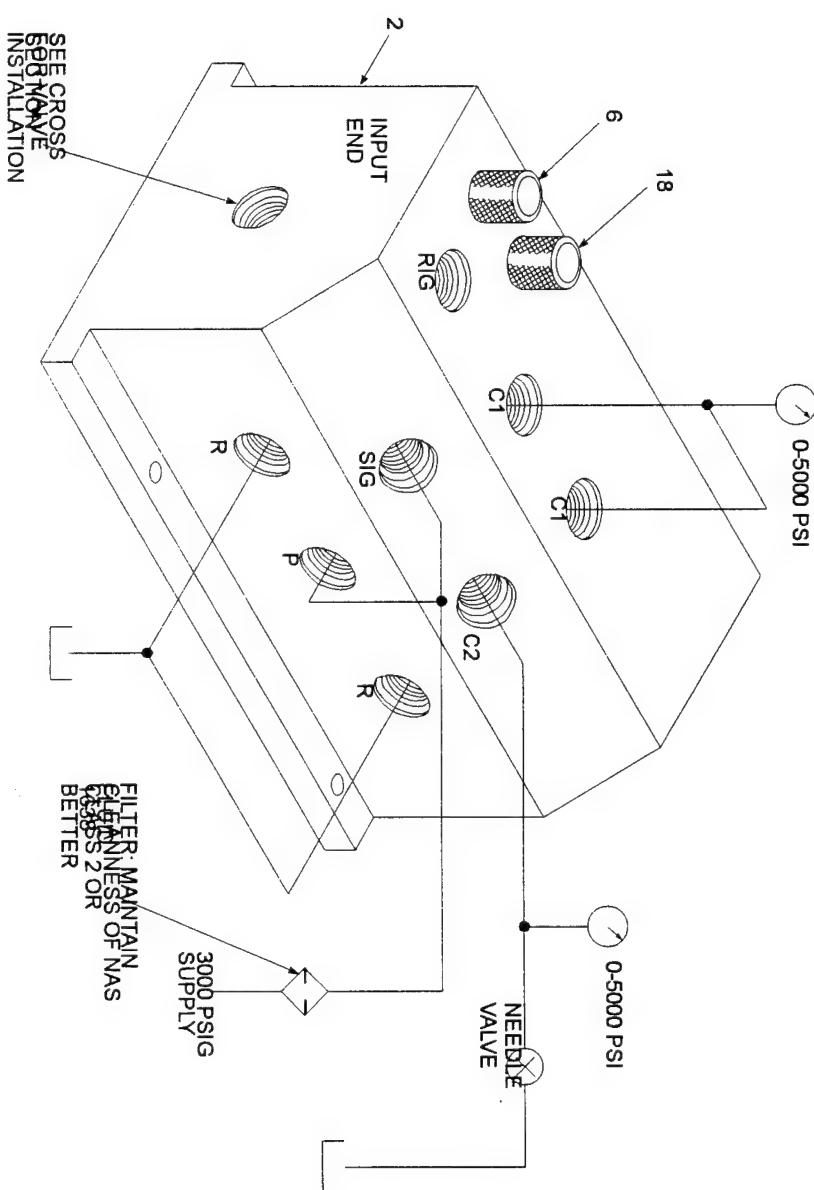
LEGEND  
 2 2227000F104SP BLOCK  
 6 2227000F104JMM PLUNGER  
 14 2227000F104JMM SPACER  
 16 MS28775-08 PACKING  
 18 2227000F104JMM SPACER  
 20 2227040-T SPECIAL PREFORMED PACKING

AA3

### 11.2.7 Output Designer



### 11.2.8 Output Freelance



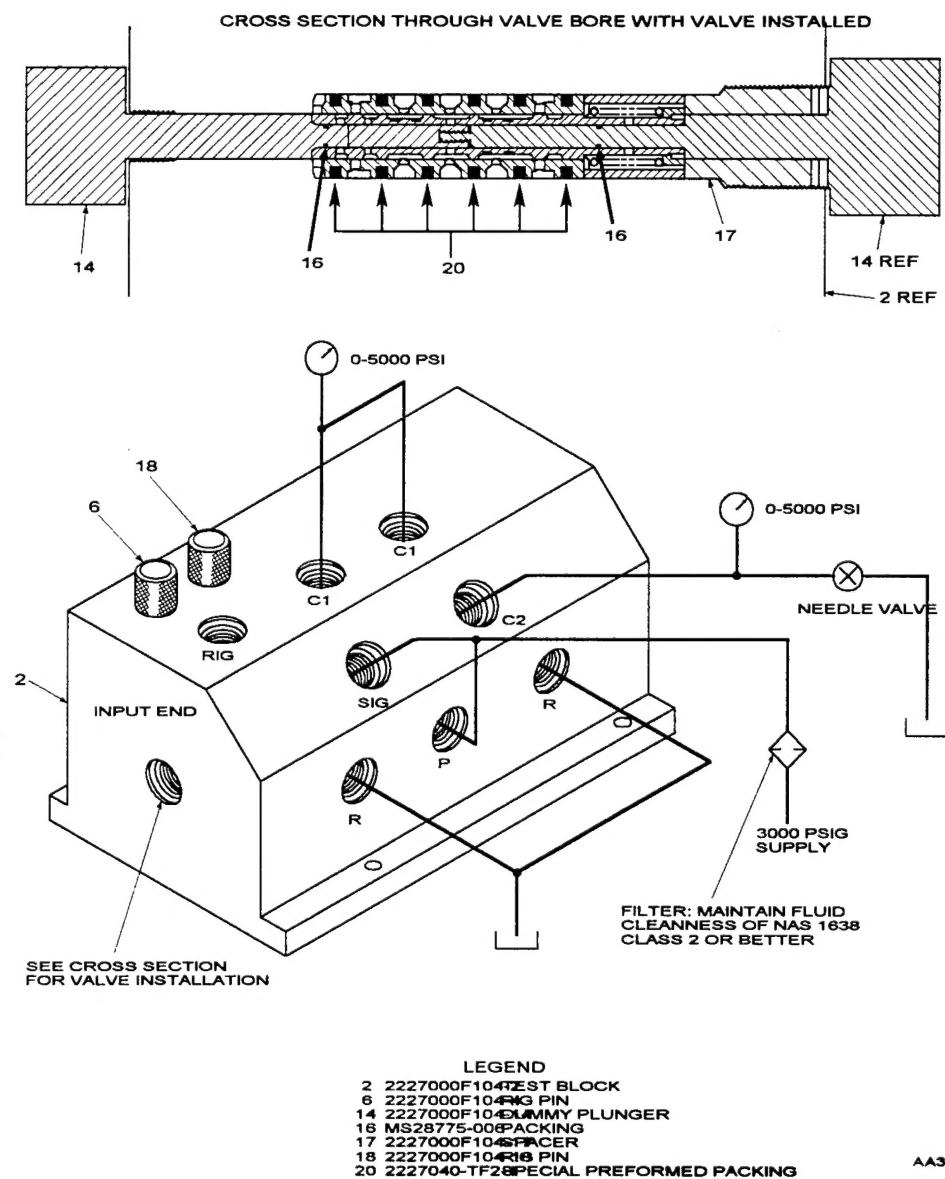
**CROSS SECTION THROUGH VALVE BORE WITH VALVE  
INSTALLED**

LEGEND

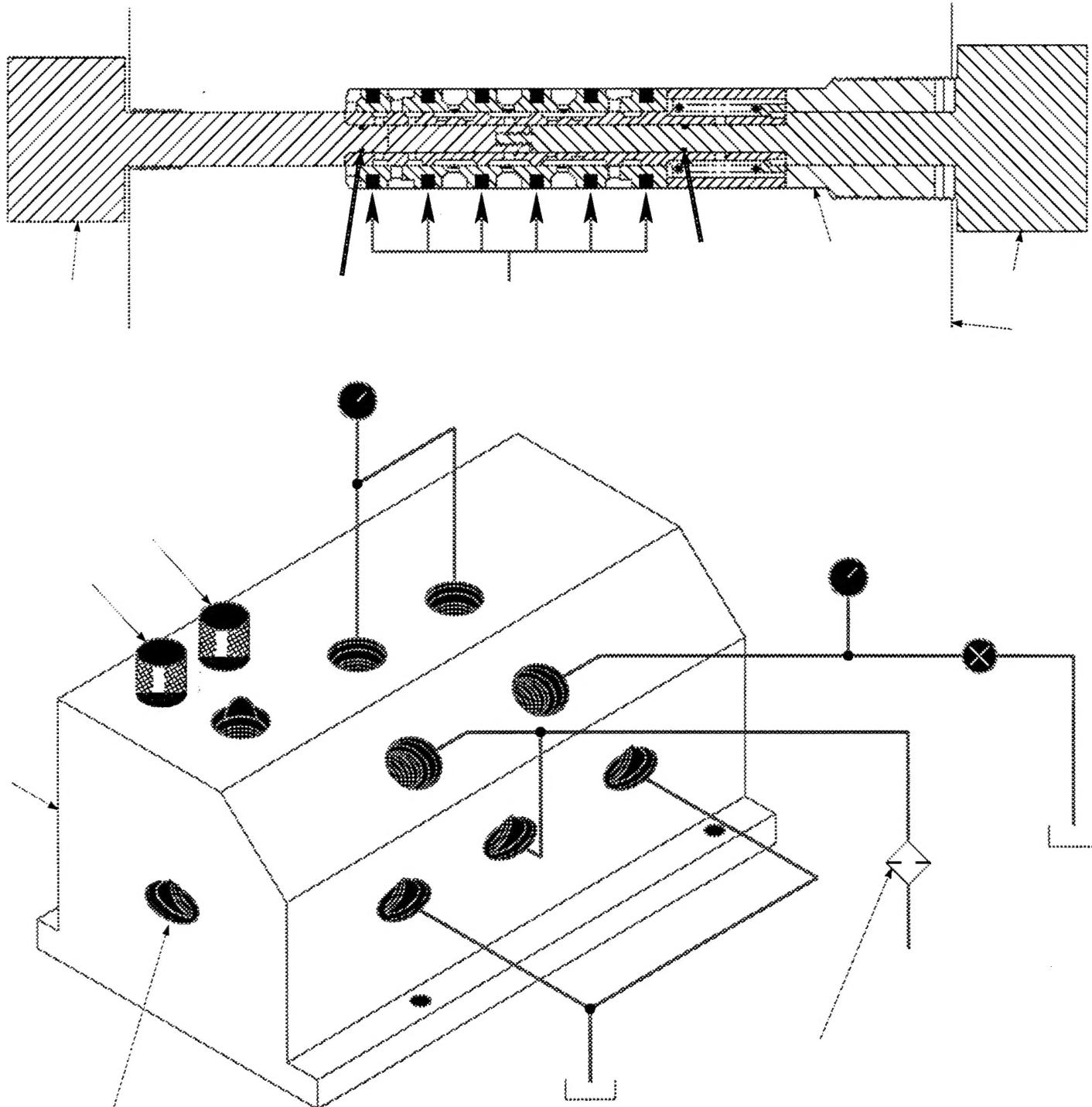
2	222700F-104-BLOCK
6	222700F-104-BLOCK
14	222700F-104-PLUNGER
16	MS28775-006 PACKING
17	222700F-104-BLOCK
18	222700F-104-BLOCK
20	2227040-TF21PACKING

AA3139  
SA

### 11.2.9 Output HiJaak Pro

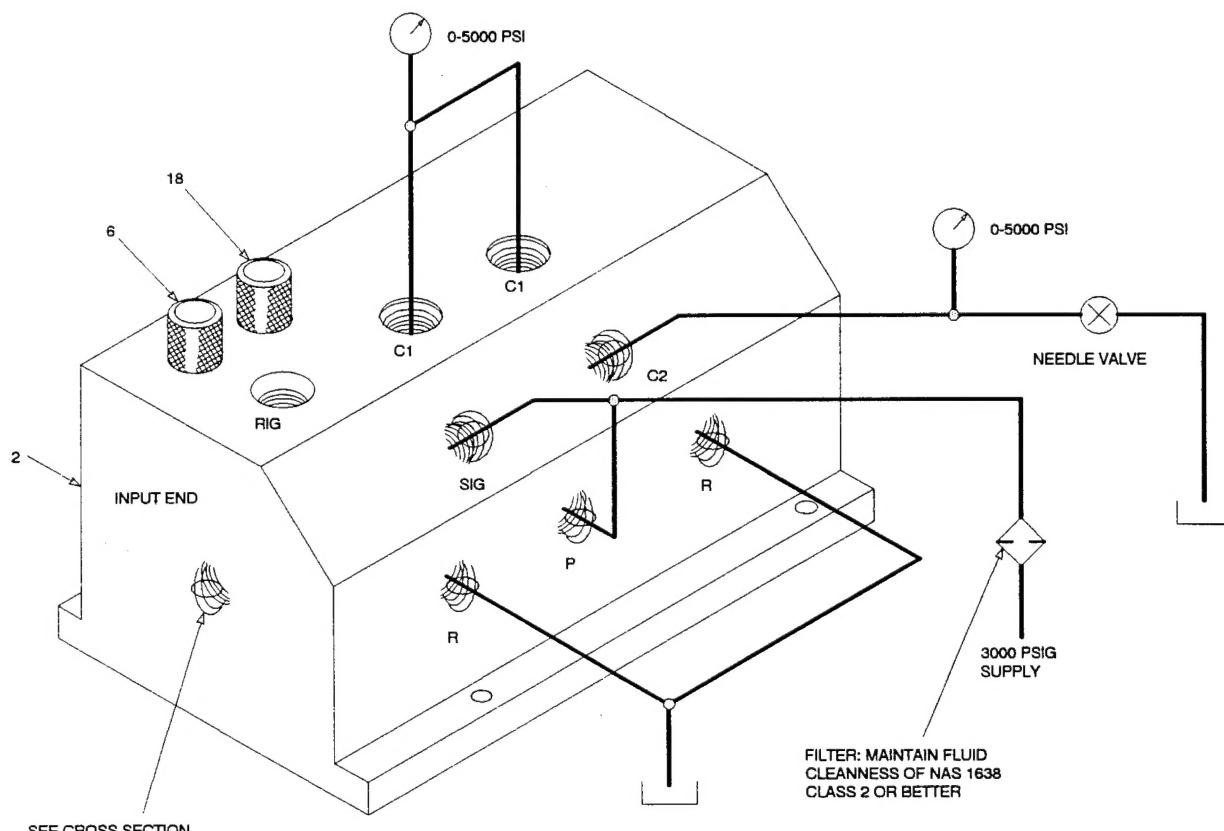
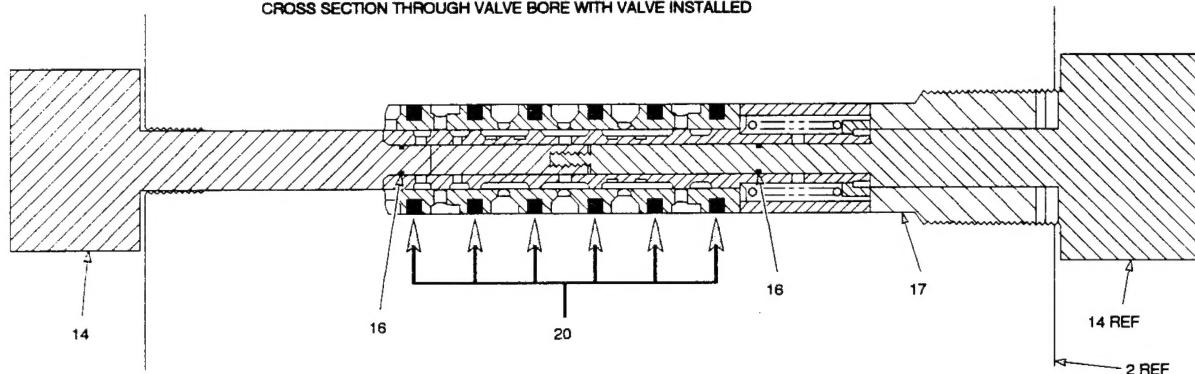


### 11.2.10 Output IslandDraw v4.0



### 11.2.11 Output Ventura Publisher

CROSS SECTION THROUGH VALVE BORE WITH VALVE INSTALLED



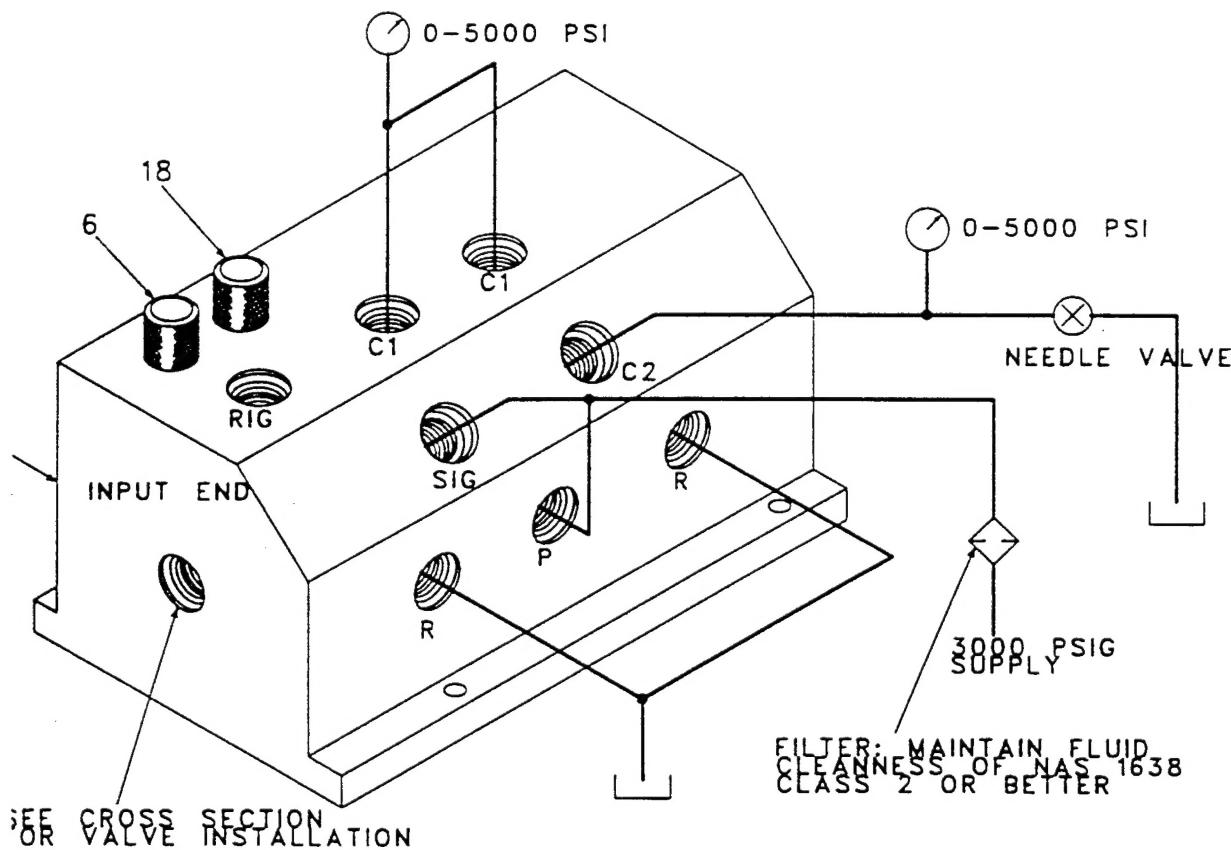
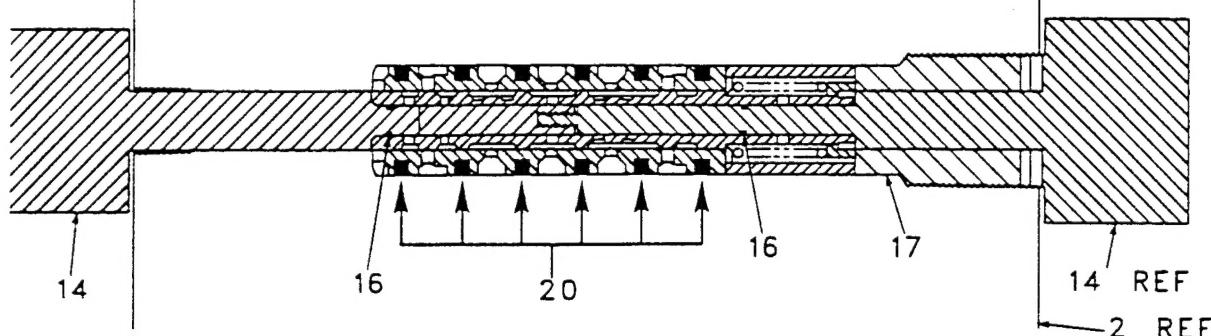
LEGEND

2	2227000F104-2	TEST BLOCK
6	2227000F104-4	RIG PIN
14	2227000F104-14	DUMMY PLUNGER
16	MS28775-006	PACKING
17	2227000F104-17	SPACER
18	2227000F104-18	RIG PIN
20	2227040-TF2-1	SPECIAL PREFORMED PACKING

AA3138

### 11.2.12 Output X-Change

CROSS SECTION THROUGH VALVE BORE WITH VALVE INSTALLED



LEGEND	
2	2227000FTST2 BLOCK
6	2227000FT02-PIN
14	2227000FT04MM PLUNGER
16	2228750FTDODGING
17	2227000FTSPACER
18	2227000FT02-PIN
20	2227040-S#2GAL PREFORMED PACKING

AA3139  
SA